Purpose

This memorandum is to describe the request from Region 3, Environmental Protection Agency (EPA), Hazardous Site Cleanup Division to the Water Resources U.S. Geological Survey (USGS), Water Resources Division, for assistance in determining the natural occurrence and range of several groundwater quality constituents including, but not limited to arsenic, manganese and sodium. The data for this survey is from the Dimock, Pennsylvania, area and includes approximately 60 groundwater supply wells.

Background

EPA is currently assessing the groundwater quality in an approximate 9 square mile area surrounding Dimock, Pennsylvania. A significant number of the groundwater samples have shown concentrations of substances such as arsenic, manganese, barium, lithium and sodium, that some might describe as brackish, that exceeds various water quality limits for safe consumption of water. The presence of this "brackish" groundwater has raised concerns that there may be a non-natural origin for these conditions.

In conducting a literature search regarding groundwater quality, several USGS papers discussing the presence of apparent "brackish" groundwaters in several regions of northern Pennsylvania, was found. One of the authors common to several of the papers, Dennis J. Low P.G. USGS WRD, Limekiln Road, New Cumberland, Pennsylvania, office was contacted by Region 3 On-Scene Coordinator Richard Rupert. OSC Rupert is now requesting Mr. Low to complete the task described below.

Request

Region 3 EPA requests Dennis J. Low, of USGS WRD to examine the groundwater quality data and groundwater well information of approximately 60 homes in the Dimock area, provided by EPA and offer an informal opinion on the nature of the groundwater quality. The overall level of effort for this review is anticipated to take less than 2 days. It is anticipated the following tasks will be required needed to provide an opinion:

1. Review the EPA provided map for any distinct spatial patterns.
2. Review local geology maps
3. Perform simple statistics to better understand water quality.
4. Compare results from EPA provided data set to USGS historical data.
5. Review driller records from the township(s) to determine if brackish water has been encountered before.
6. Finally, offer a simple opinion, in email form, as to whether arsenic, manganese and brackish conditions are consistent with other hydro-geologic settings in Pennsylvania or exceed historical or other recently collected data.

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